ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

FIRST EXPERIENCE OF THYROID ENDOSURGICAL OPERATIONS: LITERATURE REVIEW

Assistant **Khoshimov I. M.**

Assistant **Akhmadjonov J.O.**

Department of General Surgery and Transplantology

Annotation: The aesthetic impact of standard thyroid gland (TG) surgery on the anterior neck surface does not satisfy the ever-increasing demands of modern society. This situation establishes the necessity of creating novel methods for carrying out TG surgery.

Key words: Miniaturization, thyroid gland, methods, traditional thyroidectomy.

The history of minimally invasive surgery is inextricably linked to technological advances. The combination of three factors of technological progress, a system of rod lenses, miniaturization of image transmission systems and devices for gas insufflation in the body cavity in order to create a working cavity allows performing minimally invasive operations with less trauma compared to open surgery [1]. One of the most interesting potential anatomical spaces for surgeons is the neck. The complexity of endoscopic operations on the endocrine organs of the neck has been a challenge for many years for surgeons seeking to widely introduce endosurgical technologies into thyroid surgery. According to the method of performing thyroid surgery, they are divided into open (traditional) and endoscopic (fully endoscopic and video-assisted). Many patients believe that endoscopic thyroid surgery is always better than traditional, but this opinion cannot be considered correct. Endoscopic surgeries have many advantages in the treatment of the chest and abdominal organs, but in thyroid surgery, endoscopic surgeries have both advantages and disadvantages compared to open ones.

One of the important advantages of endoscopic thyroid surgery is the movement of the postoperative scar to an inconspicuous area (for example, to the armpit), or a decrease in the size of the postoperative scar to 2-2.5 cm (with video-assisted surgery). At the same time, with endoscopic removal of the thyroid gland from the armpit, it is necessary to create a sufficiently deep tunnel in the subcutaneous tissue in order to get from the armpit to the thyroid tissue - this increases the trauma of the operation and complicates the surgeon's work. That is why endoscopic thyroidectomy should be performed only in specialized endocrine surgery centers, where surgeons have significant experience in performing such operations.

Traditional thyroid surgeries can be performed in very different ways. A specialized endocrine surgery clinic differs from a general center primarily in that during thyroid surgery, endocrine surgeons do not cut the neck muscles, plan skin sutures along the natural folds of the neck (which significantly improves the cosmetic result of the surgery), and perform operations from a short access (usually the suture after traditional thyroid surgery in a specialized center is about 4-5 cm long). If performed correctly, traditional surgeries can be very minimally invasive — even less invasive than video-assisted surgeries.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

One of the ways to overcome these difficulties is to consider endoscopic operations on the thyroid gland (TG)as surgical interventions performed in a potential working space. Extracervical accesses include the following: transaxillary, retroauricular, axillary-mammary (with or without access in the contralateral axillary region), thoracic, and transoral. According to E. Berber et al. [2], the most common methods in 2015 were: endoscopic thoracic access, endoscopic and robotic bilateral axillary-mammary access, endoscopic and robotic transaxillary access. With the introduction of endoscopic and robotic technologies in thyroid surgery, specific complications are described and studied, which include plexitis of the brachial plexus, perforation of the separated skin flap, as well as sensory disorders in the surgical area. An exceptional complication when performing thyroid surgery from a transoral approach in the vestibule of the oral cavity is damage to the chin nerve. A specific complication when using the post-auricular approach is damage to the marginal branch of the facial nerve due to compression of the latter by trocars in a narrow surgical canal in the post-auricular region. Currently, we have found three works in the world literature devoted to the analysis of long-term cancer outcomes and the safety of performing robotic total thyroidectomy compared to traditional thyroidectomy for papillary thyroid cancer [3-5].

All patients in three studies underwent prophylactic central neck lymph dissection. One of the main criteria analyzed in all studies was the recurrence rate of the underlying disease. S. Lee et al. [3] report the same tumor recurrence rate (1.2%) in both groups of patients (after traditional access surgery and robotic surgery) with an average follow-up of 74 months. In T. Sung et al. [4] with an average follow — up of 57.2 months, the recurrence rate after open surgery was 1.5%, and after robotic thyroidectomy-2.7%. The lowest average follow-up period was demonstrated in study K. Tae et al. [5] — 43.6 months — at the same time, tumor recurrence was diagnosed in 1.1% of patients after traditional thyroidectomy and in 0.5% of cases after robotic thyroidectomy. In all studies, relapses were locoregional in nature, and there was no long-term metastasis during follow-up. In conclusion, the authors conclude that the cancer outcomes are statistically comparable and safe in the long-term follow-up period, but conclude that further studies with a large number of patients and follow-up periods are necessary. The use of minimally invasive technologies in Graves ' disease surgery requires separate consideration. The key limiting factor for the relatively widespread use of minimally invasive technologies in the treatment of Graves ' disease is increased thyroid vascularization, which causes technical difficulties of the operation in conditions of intraoperative bleeding. In 2011, P. Alesina et al. [6] presented the results of minimally invasive video-assisted thyroid surgery in 157 patients with Graves ' disease. Among the technical features, the transition from the clipping technique for the treatment of the upper thyroid artery and vein to the use of bipolar coagulation after performing the 91st minimally invasive video-assisted operation is noteworthy. The main factor in selecting patients with Graves ' disease for video-assisted surgery was the thyroid volume measured using thyroid ultrasound and not exceeding 30 ml. According to the author, manipulations on the thyroid gland with a fragile capsule in conditions of diffuse toxic goiter from extracervical accesses may cause uncontrolled intraoperative bleeding. In this regard, the author anticipates that the use of robotic technologies with all its advantages will reduce the risk of intraoperative bleeding and will serve as an alternative to video-assisted thyroid surgery for Graves ' disease, while demonstrating results comparable to video-assisted surgery in terms of the radical nature of surgical intervention.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

The results of a meta-analysis comparing the immediate results of open and endoscopic thyroidectomies for Graves ' disease revealed the advantages of endoscopic technologies in terms of cosmetic effect and lower blood loss, while traditional surgery is associated with shorter duration and costs for inpatient treatment [7]. Statistically comparable results for both methods are shown by such criteria as the volume of discharge through drains, the frequency of complications, including transient ULN paresis, transient hypocalcemia, postoperative hypothyroidism, and recurrent thyrotoxicosis. An important point to clarify is that in all the studies included in the meta-analysis, a feature of preoperative preparation of patients for endoscopic thyroidectomy for Graves ' disease was the administration of Lugol's solution.

Thus, endoscopic operations on the thyroid gland performed in a potential working space are currently a dynamically developing area of surgery based on the introduction of modern technological achievements and methodological developments. At the same time, further analysis of the results of operations on the thyroid gland from remote accesses is required to properly determine the indications and contraindications for such operations, as well as further development of optimal aspects of surgical technique, which would expand the scope of endosurgical technologies for the treatment of patients with thyroid diseases.

References

1. Jaffray B. Minimally invasive surgery. Arch Dis Child. 2005;90(5): 537-542. https://doi.org/10.1136/adc.2004.062760
2. Berber E, Bernet V, Fahey TJ 3rd, Kebebew E, Shaha A, Stack BC Jr, Stang M, Steward DL, Terris DJ. American thyroid association statement on remote-access thyroid surgery. Thyroid. 2016;26(3):331-337. https://doi.org/10.1089/thy.2015.0407
3. Lee SG, Lee J, Kim MJ, Choi JB, Kim TH, Ban EJ, Lee CR, Kang SW, Jeong JJ, Nam KH, Jo YS, Chung WY. Long-term oncologic outcome of robotic versus open total thyroidectomy in PTC: a casematched retrospective study. Surg Endoscopy. 2015;30(8):3474-3479. https://doi.org/10.1007/s00464-015-4632-9 39
4. . Sung TY, Yoon JH, Han M, Lee YH, Lee Y, Song DE, Chung KW, Kim WB, Shong YK, Hong SJ. Oncologic Safety of Robot Thyroid Surgery for Papillary Thyroid Carcinoma: A Comparative Study of Robot versus Open Thyroid Surgery Using Inverse Probability of Treatment Weighting. PLoS One. 2016;11(6):0157345. https://doi.org/10.1371/journal.pone.0157345
5. Tae K, Song CM, Ji YB, Sung ES, Jeong JH, Kim DS. Oncologic outcomes of robotic thyroidectomy: 5-year experience with propensity score matching. Surg Endoscopy. 2016;30(11):4785-4792. https://doi.org/10.1007/s00464-016-4808-y
6. Alesina PF, Singaporewalla RM, Eckstein A, Lahner H, Walz MK. Is minimally invasive, video-assisted thyroidectomy feasible in Graves' disease? Surgery. 2011;149(4):556-560. https://doi.org/10.1016/j.surg.2010.11.018
7. Zhang Y, Dong Z, Li J, Yang J, Yang W, Wang C. Comparison of endoscopic and conventional open thyroidectomy for Graves' disease: A meta-analysis. International Journal of Surgery. 2017;40:52-59. https://doi.org/10.1016/j.ijsu.2017.02.054